

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

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(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PC-21014987</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/SE2004/001007</b>	International filing date (day/month/year) <b>23.06.2004</b>	Priority date (day/month/year) <b>04.07.2003</b>
International Patent Classification (IPC) or national classification and IPC <b>H01F 41/02</b>		
Applicant <b>PANPOWER AB et al</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☒ (sent to the applicant and to the International Bureau) a total of 4 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

Date of submission of the demand  <b>04.05.2005</b>	Date of completion of this report  <b>16.06.2005</b>
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer  <b>Magnus Westöö/MP</b> Telephone No. +46 8 782 25 00

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2004/001007

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))  
☐ publication of the international application (under Rule 12.4)  
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1-23 as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the claims:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* 1-4 received by this Authority on 04.05.2005

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the drawings:

pages 1-6 as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2004/001007

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>1-15</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-15</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-15</u>	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1: US 4779812 A

D2: WO 9810449 A1

The cited documents represent the general state of the art.

The invention defined in the amended claims 1-15 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed method/bobbin/system for manufacture of toroidal transformers, the claimed toroidal transformer or the claimed use. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-15 is novel and is considered to involve an inventive step. The invention is industrially applicable.

Enclosure: NEW CLAIMS 1

1. Method for manufacture of toroidal transformers, the method comprising the steps of:

arranging a coil around the periphery of at least one hollow bobbin of elongated shape and of flexible material;

bending said at least one bobbin, together with said coil, so that the bobbin ends are brought towards each other, one of said bobbin ends defining an opening; and

feeding a ribbon of magnetic material through said opening, so that said ribbon is being wound a required amount of tightly packed winding turns inside said bobbin until essentially the whole interior cavity of said bobbin is filled, said ribbon thereby forming a core.

2. Method according to claim 1, comprising the additional step of:

cutting said ribbon at a desired length after having fed said ribbon through said opening.

3. Method according to any one of claims 1 or 2, comprising the additional step of:

pre-bending said ribbon at the end intended to first be fed through said opening.

4. Method according to any one of claims 1 to 3, comprising the additional step of:

providing a part of said ribbon first being fed into the bobbin essentially corresponding to the first wound winding inside said bobbin of said ribbon, on the side facing the inner curvature of the interior hollow cavity of the bobbin, with a layer having a low coefficient of friction for facilitating sliding of said ribbon while being wound inside said bobbin.

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5. Method according to claim 4, wherein said layer is provided by at least one of an adhesive tape having a first side with low coefficient of friction and a second side being adhesive, a coating with low coefficient of friction, and a fluid.

6. Method according to any one of claims 1 to 5, comprising the additional step of:

arranging a flexible transmission element so that it is in continuous co-operation with the innermost winding of said ribbon, further facilitating sliding of said ribbon while being wound inside said bobbin, thus forming the core.

7. Method according to any one of claims 5 or 6, comprising the additional step of:

arranging mediating means in connection to said ribbon for mediating co-operation between said flexible transmission element and said ribbon, said mediating means engaging with said flexible transmission element over a distance corresponding to at least a fraction of the innermost winding inside said bobbin of said ribbon.

8. Method according to claim 7, wherein said mediating means comprises a from said ribbon protruding part of said layer.

9. Method according to any one of claims 1 to 8, wherein the step of feeding said ribbon of magnetic material through said opening further comprises:

rotating said bent bobbin together with said coil; and  
stopping, essentially instantaneously, the rotation of said bent bobbin together with said coil.

10. Method according to any one of claims 1 to 9, wherein the step of feeding said ribbon of magnetic material through said opening further comprises:

injecting a medium through said opening, thereby creating a variable gap between the outer curvature of the interior of said hollow bobbin, being in a bent position, and said ribbon; and

leading said medium out from said hollow bobbin.

11. Method according to any one of claims 1 to 10, wherein said method is performed in a magnetic field.

12. Bobbin for manufacture of toroidal transformers, essentially comprising an elongated tube, characterised by:

said elongated tube being made by a flexible material and adapted to be bent, so that the ends of said elongated tube may be brought towards each other, one of said ends of said elongated tube defining an opening; and

said elongated tube having an essentially rectangular interior hollow cross-section.

13. System for manufacture of toroidal transformers, the system comprising:

means for arranging a coil around the periphery of at least one hollow bobbin of elongated shape and of flexible material;

means for bending said at least one bobbin, together with said coil, so that the bobbin ends are brought towards each other, one of said bobbin ends defining an opening; and

means for feeding a ribbon of magnetic material through said opening, so that said ribbon is being wound a required amount of tightly packed winding turns inside said bobbin until essentially the whole interior cavity of said bobbin is filled, said ribbon thereby forming a core.

14. Toroidal transformer manufactured by said method for manufacture of toroidal transformers, according to any one of claims 1 to 11.

15. Use of a toroidal transformer according to claim 14 in electrical equipment, such as adaptors.